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Presence in the Past: An Examination of the Use of Technology in History Museums to Adapt to the Modern Museumgoer

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PRESENCE IN THE PAST: AN EXAMINATION OF THE USE OF TECHNOLOGY IN
HISTORY MUSEUMS TO ADAPT TO THE MODERN MUSEUMGOER

By

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A Senior Project in Partial Fulfillment of the Requirements of the Honors Program

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Introduction and Thesis

When preparing to visit the Minnesota History Center, a potential museumgoer may look at the online website in order to see what the opening hours are and what exhibits are currently on display. During the visit, the museumgoer will experience audio-visual content in different exhibits such as the Minnesota 150 (MN150) and the Minnesota's Greatest Generation Exhibit. Once the museumgoer has left the museum, it is easy to become a fan on Facebook and subscribe to eNewsletters to keep updated about the latest exhibits and events at the Minnesota History Center. This experience allows one to connect to the exhibit through the interactive and audio-visual pieces at the actual museum and continue the connection to the museum long after the visit. This is just one example of the utilization of technology in the museum experience.

In the past fifty years, museums of all types have moved from institutions focused solely on the display of objects, to being a community-based organization that is focused on the visitor and the visitor's experience.¹ At the same time, the world of technology has been in flux in terms of both the number of technologies and access to these technologies. With the many different types of technology available, museums have been some of the first institutions to utilize them as a tool to expand their programs and services to allow for the modern-day, visitor-focused approach.² Among these museums have been history museums and, to some degree, historic sites. With all of these changes occurring in history museums there are several significant questions that need to be addressed. What has a more visitor-centered, experiential, and interactive approach meant for history museums? How and what types of technologies have enabled history museums to better focus on the museumgoer's experience before, during, and after their actual museum visit? Finally, what are the benefits and drawbacks to the use of technologies in museums?

The use of technology in history museums allows for a more visitor-centric approach, which has been beneficial in creating a more accessible and personalized museum experience. However, it is possible that technology becomes an end in itself if the artifacts and social interactions in the museum are ignored. Especially concerning to museum professionals and historians is the loss of their authority and expertise as technologies enable more visitors to create their own version of history in an increasingly public way.

Museums have experienced many changes, especially during the most recent thirty years, as museum studies have become more professionalized and better researched.³ By examining these changes, mainly that of moving from a more object, collections-based, approach to a more visitor-centric one, the implications for history museums can be explored. This shift has created new expectations for history museums to present the past in a way visitors can connect and interact with. A concomitant expansion of the study of history to allow for multiple perspectives and more diverse subjects has been helpful in creating these connections. This expansion of history, and ideas that focus on the public's personalization of history and that each museumgoer is a storyteller with authority, has helped create new methods in history museums. Two of these significant methods have been to allow the museum audience to experience the past first-hand and to present multiple sources of information for the museumgoer to interpret.

The change in museums from an approach focused on the collections to one focused on the visitor has been enabled by technological developments over the past fifty years. Museums have been quick to adopt technologies that allow for visitors to be better informed throughout their museum experience.⁴ Before their visit, museumgoers have multiple sources of information available to them to prepare for their museum experience. Once in a museum, the visitor can use technology to interact with the exhibits and learn more information by choice. Finally, after an

exhibit, the visitor can keep in contact with the museum and find out more through updated information. Technologies have many utilizations and benefits in history museums in providing for the visitor-focused approach, yet have potential significant drawbacks for the visitor's experience as well as for the museum and its professionals. This study examines the history of the shift from a collections to a visitor-based approach, draws on interviews with museum professionals and provides examples of technology used in history museums to better understand the benefits and possible pitfalls of using technology to interpret history.

To look at history museums' utilization of technology, I used primary sources in addition to the existing body of literature. I conducted interviews with twelve museum professionals to try to ensure some degree of diversity. As a result, I managed to interview museum professionals from history museums of all sizes, from small historical societies to large history centers. I also have a diversity in terms of location of museum professionals. Most were located in the Midwest; however, I was able to interview one from the West Coast and one from the East Coast of the United States. The most variation I was able to collect was in terms of professional experience and training; some museum professionals had Doctorates in Museum Studies, whereas others had advanced degrees in Public History, and still others had no professional museum training and came from a variety of diverse backgrounds, including theatre. This diversity ensured that a range of expertise, experience, and opinion would be collected. In addition to this use of primary sources, I utilized my own experience working in a museum as an intern and also visiting many museums, particularly during my time in Europe. These primary sources proved to be a valuable resource, allowing for new content in my paper.

With the still-recent changes in museums, in the context of an increasingly competitive entertainment and leisure industry, more research is needed into the utilization of technology in

history museums. While there has been research on the impact of technology in other types of museums, such as art and science museums, there has been little done on history museums. Researchers who specialize in museum studies have considered the study of history museums the duty of Public Historians, those who expand on academic history by emphasizing nontraditional evidence, innovative presentation methods, and reframing questions to present history to be seen, heard, read, and interpreted by a popular audience.^{5,6} Additionally, because technology and the innovative applications of technology are changing rapidly, many history museum professionals will readily admit to not being completely up to date on current articles and issues that are related to the use of technology in museums.⁷ Furthermore, there has been a disparity among history museums in adopting the interactive, visitor-focused approach.⁸ Access to funds has delayed development as many history museums, like most other museums, are non-profits and must rely on public funding or government grants for support which can limit their ability to modernize.⁹ However, as museums are becoming more professionalized entities, it is necessary that greater study be done on history museums.¹⁰

The need for greater study is amplified by the needs and interests of the museumgoer. Modern museumgoers are starting to have an expectation of interaction and often of some utilization of technology in their museum experience.¹¹ Younger people are increasingly technologically oriented and, in general, have a shorter attention span.¹² For this reason, it is important that interactive technology as a tool in museum visitor experiences be researched.

Historiography

Little published research exists that focuses solely on the changing field of history museums and their utilization of technology as most focus on Public History, written for Public

Historians; or Museum Studies, written for general Museum Studies professionals. There have, however, been some significant studies done by Public Historians dealing directly with history museums. These studies have focused on the background of history museums and of Public History in the United States, most significantly in *Historians in Public: The Practice of American History 1890-1970*, by Ian Tyrrell; *Public History: Essays from the Field*, edited by James B. Gardner and Peter S. LaPaglia; and *Public History Readings*, by Phyllis K. Leffler and Joseph Brent.^{13,14,15} All of these included sections on changes and methods used to present history to the public, often with specific information on museums. Research has also focused on the meaning of United States history to the public, most significantly in Roy Rosenzweig and David Thelen's *The Presence of the Past: Popular Uses of History in American Life* which focuses on the need for the general public to connect to the past on a personal level.¹⁶ Additionally, some research has been done solely on the utilization of technology by museums; one of the most significant available articles is "Exhibiting History: The Digital Future," by Paul Arthur, which shows how history museums can use technology to better interact with the public, particularly online.¹⁷ In general, research done by Public Historians about the new visitor-focused museum and its utilization of technology has focused more on the background of history museums and historic sites and has very little information on technology as a tool.

However, there is a large body of literature on general museum topics, including significant and ongoing research on technology, as well as on the new experiential or visitor-focused museum of today compared to the more object, collections-based museum of the past. These present the history of museums as well as new educational approaches and theories that museums can use in order to integrate the visitor-focused approach. Many of these texts tend to be collections of articles that deal with all changes in museums, from the way museums are

managed, to how they collect artifacts, to questions over authority in presentation, particularly of indigenous peoples' artifacts. Two notable examples of these comprehensive texts focusing on museums are *Museum Revolutions: How Museums Change and are Changed*, edited by Simon J. Knell, Suzanne MacLeod, and Sheila Watson; and *Theorizing Museums*, edited by Sharon MacDonald and Gordon Fyfe.^{18,19} Museum research has also focused on the visitors and ways to create better visitor experiences such as presented in John Falk's *Identity and the Museum Visitor Experience* and Nina Simon's *The Participatory Museum*.^{20,21} Overall, research has been comprised of general collections and research highlighting visitor engagement.

In addition to books focusing on the changing interpretive museum world, there is a significant and ever-growing research on technology in museums in addition to the previously mentioned Arthur article and Simon text. In general, information about technology in museums has been primarily on art and science museums and their utilization of a wide range of technologies, such as in Lena Maculen's doctoral thesis, "Researching Podcasting in Museums: Can New Broadcasting Models of Publication Make Art More Accessible?" which studies art museums' use of podcasts.²² One of the most comprehensive studies, *Digital Technologies and the Museum Experience: Handheld Guides and Other Media*, by Loïc Tallon and Kevin Walker, presents a collection of articles about different types of technologies, particularly multimedia handhelds, and their utilization in the museum experience.²³ However, because of its publication in 2008, it already is obsolete in 2011. This is a problem with research on technology in museums as technologies advance faster than museums and museum studies professionals can respond. Just as technology is in flux, so are the books and articles on it and its utilization in museums. It is important to note that, in general, most museum studies research is based on case

studies from Europe, particularly the United Kingdom, whereas the original impetus for a more visitor-focused and interactive approach originated in the United States.²⁴

History of Museums

Museums began as cabinets of curiosities in the late 16th century as explorers and the wealthy began to acquire a selection of often rare and exotic objects and specimens from around the world. These often were rather haphazard collections with some degree of order or focus, such as on rare insects, cultural objects from a distant and exotic land, or fine art, but often they were private. Because these were private collections, they were merely for personal prestige of the collectors, often royalty or nobility, collected only for pleasure and glorification of themselves and their families. These collectors “collected that they might possess, not that they might use, or that others might use, the things collected for the pleasure and advancement of the world at large.”²⁵ Because these collections were usually based on the personality, interests, or activities of collectors, they often focused on or revealed more about the collector than the actual collections. Additionally, because they were private, only with permission, often an invitation, could anyone be granted access. Often, the few who were given access were fellow members of the academic or social elite. These cabinets are best exemplified by the private art galleries of various members of the nobility such as the de Medici family or the collections of the Pope, located at the Vatican, comprised of many items, including various art, coins, and artifacts.²⁶

Museums began to be open to the public beginning in the late 17th, but particularly 18th, centuries as the Age of Enlightenment began to influence Europe. These first museums were often private collections, such as those of royalty, which became open to the public and often first housed in palaces or castles.²⁷ The governments would, in many cases, confiscate or

purchase these items to make them public and then later place them in national and municipal buildings.²⁸ Among the first museums were the Museum Sacro, a Vatican museum, which opened 1756, the British Museum in London, which was founded in 1753 and opened to the public in 1759, and the Uffizi Gallery in Florence which had been open to visitors on request since the 16th century and officially opened to the public in 1765.^{29,30,31} The first museum in the Netherlands was the Teylers Museum in Haarlem which opened in 1784 to show the formerly private collections of Pieter Teyler, a rich merchant and banker.³² These first museums were open to the public but only to the upper and middle classes due to strict admissions policies and tickets which were often too expensive for the lower classes. The Louvre was one of the first museums to open itself to all classes in 1793 as a result of the French Revolution which enabled the former royal art gallery, located in a palace, to be open to people of all classes.³³ The first American museum was opened in Charleston, South Carolina, in 1773.³⁴

This process was the beginning of the democratic, public, museum. They were democratic as they were considered to be for and of the public; the collections were to be accessible to the general populace. Also significant was that these museums were considered to be uplifting to the general masses. The idea was that by assembling and interpreting many different collections for the general public, it would further their education and enrichment and provide recreation. However, though these museums professed to be for the public, often only the highly educated could truly benefit from any type of museum, be it history, art, or science, due to the museum's object, collections-based approach.³⁵

In an object or collections-based approach, the object, be it an artifact or a painting, is presented with basic labeling that merely identifies it. This focuses on what the object is, what it looks like, what its uses are, and its qualities; the object in its own context and display. This

form of display is the result of two main factors. The first of these is that the “academic, curatorial elite” frequently organized these collections and often based their interpretation on solely academic models. Because of this, the object-based approach could only be understood by those with an education in the scientific systems of classification, the dominant theories of history, or the academic study of art and art history. Because many people lacked this education, it was impossible for them to understand or appreciate what was in the museums. Similarly, the selection of materials often reflected a socially elite taste, hence another barrier towards the public museum. With this elite taste, many social groups, such as women, lower classes, African slaves, and indigenous populations, had their material culture ignored or stereotyped. All of these characteristics of a collections-based approach were isolating to the general public.³⁶

A history museum or historic site that followed this approach would simply display artifacts and basic information on them. Little information, context, or opportunity would be available to learn more about objects or how they might relate to the present, thus lacking real means to engage the visitors. For example, a teacup used by a rich man would simply be identified as such; there would be little explanation as to who that man was and why this particular cup was important for the museumgoers. Some segments of the population, those with an academic education, could appreciate this cup just for its significance of being of fine quality, rare design, or possibly unique ownership, but much of the general population would lose out.³⁷

This collections and object-based history as curated and appealing towards the academic elite also impacted the basic layout of the history museum. As a result, many American history museums traditionally presented their information chronologically, focusing on fossils and glacial prehistory, moving to Native American history, European contact, the settlement by those of European birth, and then the process of statehood and inclusion into national events, such as

wars. While this approach is not necessarily wrong, it is linear and offered visitors little control over their museum experience. This is because, in order for a person to understand the museum, they would need to follow the chronology, leaving the visitor very little opportunity for a free-choice learning environment.³⁸

During the past 50 years, particularly since the late 1980s, this object-based museum approach changed considerably as museums have shifted into what is called the experiential, interactive, or visitor-focused approach.³⁹ This shift was the result of exhibition critiques, historical analyses, and sociological studies that “cast” museums “in disparaging light, characterizing them as authoritative, elitist, exclusionary and conservative.”⁴⁰ Though museums should have authority over their collections, the way in which materials were presented had an isolating effect on much of the potential, museum-going population. Because museums often delivered a single academic interpretation about objects, due to a belief in the need for the public’s edification, it was seen as patronizing. Museums also were exclusive because, though in theory all were able to gain access, only certain group histories and cultures were celebrated, often those who were dominant in society at the time. These, along with ideas and theories focusing on inclusivity and equality in the social movements of the 1960s, led to new museum approaches.⁴¹ Museums in this sense had to alter their approach in order to better appeal and attract the changing, modern museumgoer and their needs in a world with new entertainment and learning opportunities.⁴²

These new museums would be visitor-focused, concentrating on how the visitors can contribute to and interpret exhibits. Alternatively, they can be called experiential, as they are geared towards the experience of the visitor, or interactive, because of the focus on the interactions that visitors have within the museum, be it individual with the exhibits or socially

with other visitors.⁴³ The importance shifted from displaying the objects to providing opportunities and experiences for the visitor to learn and create their own interpretations. This approach also meant museums “going out of your way to communicate better with the public.”⁴⁴ Additionally, adapting to different museum visitors also became important, as “museum visitors are no longer thought of as an abstract mythical body, the general public, but are seen to be made up of many individuals, who have characteristics, agendas and desires that can be researched.”⁴⁵ Because of this, museums began to focus more on who their visitor was by doing extensive research in order to meet the intellectual and physical needs of the visitor, rather than expecting the visitor to meet their criteria. This, in turn, helped museums move from a “hands off” to a “hands on” approach as it was shown that visitors learned best and were attracted by their experiences within the museum as customized for them, rather than a singular one focusing on the objects.⁴⁶

Implications for History Museums in the United States

At around the same time that museums shifted paradigms from an object, collections-based to the more experiential, visitor-focused approach, American history also became more diverse as a result of changing values due to the social movements of the 1960s in which new groups gained greater equality. Historians began to tell the stories of long-forgotten groups that had often been ignored due to racism, sexism, and classism. Because of this, history began to become more specialized and new groups such as women, indigenous peoples, African slaves, and the lower classes began to have a significant body of scholarship. Additionally, topics previously neglected, such as religion, labor, and everyday life, began to be studied more in depth and new questions were considered relevant. Not only were new areas of history studied, but

new types of information, including oral histories and media, such as music, began being considered historical sources. The growing field of oral history was particularly significant as much of the history of indigenous groups, as well as African slaves, was passed on in this manner. Artifacts and archives that related to these new fields of history began to be given greater study and more efforts were made toward their collection and preservation in museums. Because of this, the study of history, including the field of Public History, expanded significantly.⁴⁷ This expansion, in turn, gave museums more materials to utilize in their visitor-focused collections to engage visitors, while the museum provided a public medium to present a more inclusive past.

History and history museums differ from other museums because of the often deep, personal connection people have to history. Though people may not necessarily read history books or be avid museumgoers, they do care about the past in numerous ways, even if simply by collecting old coins or researching genealogy.⁴⁸ A study at the University of Arizona has shown that in the United States people are best able to relate and connect to past national events through personal stories. Those studied did not focus on the national story; instead they placed it within their personal stories or made “national personages into familiar figures in personal narratives.”⁴⁹ Others surveyed spoke of national history in distant terms, while they devoted long narratives to their personal and family history. Some people did both, relating personal stories out of national history and using more descriptive narratives for these stories. All of this reveals that the past is something very personal to people and, as a result, is how they connect to history. Overall, the study’s respondents “made national stories personal, personal stories national, and formal settings for studying the past intimate.”⁵⁰ A quote from this research seems to conclude why people do this: “when you talk about the family, you talk about lifestyle, the family’s lifestyle,

the country's lifestyle, and it is a wide area. It covers so much, your background, everything is grouped into one. To me it is all one."⁵¹ Thus, "History," as presented by historians, and "history," the past narratives of family, are connected.⁵² As a result, history is a very important part of a person's identity, as it deals with their past as well as the past of their families.

The implications of the importance of personal narrative for history museums is that to be successful at utilizing an interactive, visitor-focused experience, museums should allow for visitors to be able to connect to their past or their family's past. In other words, history museums must allow for people to see their own "history" in "History." According to one museum professional, Caitlin Adams Frey, it is important to create exhibits that connect the academic study of history to the personal story of a person or family. Frey believes that this will "get people more interested in what seems to be a generic idea."⁵³ This is an important method in history museums and historic sites as it is the social history, the stories of people, which allow museum visitors to connect to history by seeing self or family in history. A museum exhibit should allow for people to see how events, such as the Civil War, shaped their lives and their relatives' lives. In Frey's experience, working at the Minnesota Transportation Museum, she has observed that people who were not train experts often were most able to connect to the social history of trains, rather than the more technological and mechanical past. Many people, she remarked, had mentioned how their relatives, such as a grandfather, had worked on the railroad, how families had memories of riding trains to go places, or experienced trains delivering goods. This evidence is important as it shows that history museum exhibits should help visitors realize why the past is significant to them personally in order to best engage and interact with their visitors, giving them an active, interpretive, museum experience.⁵⁴

In history museums, an implication of the new museum approach has been that visitors are to experience history “first hand” by giving them opportunities to create their own interpretations. This is based on the idea that “everyman his own historian,” as history is a record of things said and done and what people do with this information to understand and utilize it.⁵⁵ This is proven in the previously mentioned research that shows the importance of history, even if unrecognized, in everyone’s lives. Additionally, humans are constantly making meaning out of all types of objects, be it art or historical artifacts; humans are always identifying, describing, and evaluating objects in different contexts. In the museum environment, all of these ideas of history are combined into the theory that every person is his or her own interpreter. These processes are influenced by personal background, social context, and environment. The ways people respond to these objects may be considered inappropriate or even naïve; however, “experiences and recent research attest to the fact that such behaviors can be integral parts of the museum experience, important and satisfying to many visitors.”⁵⁶ By allowing for processes that let people respond to and make meaning of objects, how they interpret it by experiencing it first hand, a more visitor-focused history museum can be formed.⁵⁷

This process of meaning-making in history often focuses on allowing visitors to see the significance of history in their own past or present. Whereas previous wall text and object exhibits typically have been “written in an anonymous and authoritative museum voice” these new approaches allow for more personal, collaborative, and flexible interpretation of history.⁵⁸ The implications of this type of approach for history museums are best summarized in a quote by museum professional Robert Archibald which states:

“Every museum visitor is a storyteller with authority. Every evocative object on exhibit is a mnemonic device. Every visitor interaction is story-making as visitors fit portions of our collections into personal frames of reference; most often in ways we neither intended nor anticipated.”⁵⁹

This move toward allowing history museum visitors to act as their own interpreter, or historian, has been done several ways. One popular method is when visitors are invited to imagine themselves as people in the past through both narrative and physically interactive means. Taking the identity of a person or doing activities from the past in order to learn about it allows for the connection of the past to the present through more personal means. This is because it allows the visitor the opportunity to begin to understand the life of someone who lived in the past as it is likely so different from how we live and even feel today. It also creates an opportunity for the museumgoers to create their own interpretations based on their “experience” in the past as facilitated by the museum.⁶⁰

This type of interactive experience, as a visitor “reliving” history, has been frequently utilized. An example is the traveling “Titanic: The Artifact Exhibit” which was at the Science Museum of Minnesota in the late summer to fall of 2009. When visiting this exhibit, one is given a name of an actual person on the Titanic. The museum visitor is then considered to be that person and even has a boarding pass with that person’s identity and basic information. Though the exhibit concentrates on artifacts and the historical chronology of the ship, the design of the exhibit is more interactive and experiential. Besides artifacts, the exhibit recreates sections of the boat, including the Grand Staircase. This exhibit even had an iceberg that visitors could touch which was around the same size as the one that led to the Titanic’s sinking.

In addition to recreating the ship and the experience on the Titanic, the exhibit hired actors to perform narratives about their time on the Titanic and even engage visitors as if they, too, were on the Titanic. While going through the exhibit, the air gets colder to reflect the progression of passengers getting colder as the Titanic began to sink. Finally, after learning about and seeing the artifacts, while having this more sensory experience, the visitor has the

opportunity to discover if the passenger with which they have identified lived or died. The United States Holocaust Memorial Museum similarly assigns an identity to each visitor for them to find out if the person survived the Holocaust in 1940s Europe. These examples are just some in which experiencing history first hand can include a simulated experience of a historic event or time period. These methods of interpretation can range from brief, interactive experiences to a much more complex, extended one. This method gives the visitor an experience which they can connect to in the sense that they seem to be undergoing it. It therefore allows them to connect the personal history that they experience to the larger narrative of history.⁶¹

Another method used by museums is to provide the visitor with information to interpret. This is based primarily on the concept that “every museum visitor is a storyteller with authority.”⁶² To do this, museums have implemented multiple forms of information on different topics, as well as opportunities for people to evaluate or respond to the information presented. This takes the focus of an object-based museum, presenting information from curatorial staff, but also integrates interactive elements such as soliciting visitor response. In this sense, museums try to create an effective, free-choice, learning environment by providing visitors with multiple entry points to learn more; however, it is the visitors’ choice to learn more, what they want to learn, and what they want to do with this information. History museums have managed this by providing multiple sources of information to allow people to learn on their own terms, often by creating personal connections to the information, and then later allowing them to apply this by encouraging analysis, reflection, understanding, and perspective.⁶³ This gives the museum visitors a more personalized and customized experience fitted to their needs and interests. Instead of engaging the visitor as if they lived in the past, the exhibit engages the visitor as a person with authority to view the past and its significance, particularly to the present.⁶⁴

In this way, the visitor is also asked to be a part of the museum discourse, to add their own contribution, be it as simple as a comment on an exhibit as a result of learning new information or by just developing new perspectives through the exhibit. This can be done minimally through comment boxes, emails to exhibits' designers, or even to having actual input in the selection of and presentation of content, such as in the Minnesota 150 (MN150). The MN150's content was decided by the public's nominations of what they felt was most important in Minnesota's history. However, this is just one example of what visitors' contributions can lead to, with museums sharing some authority with the public.⁶⁵

A significant example of this was at Chicago's Field Museum of Natural History in the late 1980s, right as the movement of change within museums was growing. In the museum's Native American galleries there was a diorama of the Pawnee Morning Star ceremony that depicted a young woman, naked and bound, about to be sacrificed, surrounded by men with arrows poised to shoot her. Though this does not seem particularly innovative, what the museum did next allowed for an interactive, discourse-driven, museum experience. Displayed beside the diorama they had a letter that protested its display because it showed violence towards women in a public institution. Posted next to this letter was the Pawnee Tribal Council's response defending the museum's choice to not hide history, even if unpleasant, from the public. Visitors viewing this exhibit were asked to share their opinion about the exhibit's display. These comments ranged from focusing on women's rights to examples of the museum's responsibility to the public to present accurate history. This exhibit engaged visitors and allowed them to experience history as a person with authority by being able to form their own interpretation from the information displayed. They were able to read both arguments and use their background and prior knowledge to arrive at their own conclusions. Thus, this provided an interactive learning

experience as the exhibit allowed for interpretation by, engagement of, and contribution of, museumgoers.⁶⁶

One history museum that has been particularly successful at adopting these new methods has been the Minnesota History Center located in St. Paul, Minnesota. This museum is operated by the much older Minnesota Historical Society, which was founded in 1849 and had operated several museums and historic sites prior this new center's opening. The new museum opened in 1992, after this shift from a collections-based to a visitor-focused emphasis. As a result, this museum uses the approaches which focus on the visitor's museum experience. In order to do so, it has developed through research, content and delivery that caters to visitors. In terms of content, the initial philosophy of the museum was to focus on universal human themes such as family, work, play, and community, ideas visitors could easily relate and connect to. Besides familiar and attainable content, the museum also sought delivery means that would best engage their audience and how they learn. For this reason, it utilized interpreters, interactive designs, and information geared towards different ages, as well as interests, at its inception. One of the first exhibits that the museum created was Minnesota A-Z which was very visitor-driven as it focused on items for every letter of the alphabet relating to Minnesota, such as animals for A, and had a very theatrical presentation.⁶⁷

The Minnesota Historical Society's and its Minnesota History Center's focus on museumgoers is evident today with its mission still being visitor-centric: "the Minnesota Historical Society connects people with history to help them gain perspective on their lives. The Society preserves the evidence of the past and tells the stories of Minnesota's people."⁶⁸ The museum continues to design exhibits and events for its visitors. One recent example is the yearly "Retroorama" event which focuses on the 1950s and is geared toward visitors in their twenties and

thirties. To design events for this age group, staff had to think what this demographic is interested in socially and then respond. As a result, the “Retrorama” event features live music, demonstrations, and a fashion show where visitors are invited to model their own vintage styles. In this way, the Minnesota History Center exemplifies the interactive and visitor experience in history museums. Nationwide, it is known for its innovative approaches.^{69,70}

Technology in History Museums

A more visitor-focused approach in history museums has been greatly aided by the recent proliferation of technologies. During the past fifty years, technology has brought to the world television, computers, and mobile telephones. Now technology has become more expansive with even more innovative technologies becoming common possessions in the Western World. Web 2.0 has been growing with the creation of sites such as YouTube, Twitter, and Facebook that allow anyone to create their own personal site and contribute content to the World Wide Web. In turn, all of these have been used as tools by museums to help to provide the museumgoer with a more interactive experience.⁷¹

The reason that history museums have needed to utilize technologies while embracing a more visitor-focused museum is so that they can be relevant and marketable. Nowadays, people have many different options in terms of leisure-based activities to choose from.⁷² These range from the simple, involving television or the internet, to the many opportunities for travel and other experiences, such as amusement parks. Because of the number of options that potential visitors have today, museums have needed to better market themselves and use new methods in order to attract and maintain support of museumgoers.⁷³ One way museums have adapted to their visitors to remain competitive is by using technology as a tool to better engage and provide

visitors with educational entertainment, “edutainment.”⁷⁴ For this reason, technology as an interactive tool is important not just to the museum visitor but also to the museum itself.

As a result, museums have been known to quickly adapt technologies and have been innovators in interactive devices and installations.⁷⁵ Many technologies help visitors have a more interactive and customized experience throughout their visit. They can adapt to different visitor learning and communication styles as well as behaviors. They empower visitors in the museums as well as allow for greater “transparency” into the museum process, particularly the processes of display and interpretation.⁷⁶ They even allow users to generate their own content in the museum while providing them with intellectual tools to understand the artifacts and encourage participation. Additionally, technology has allowed the presentation of histories of those who may lack collected artifacts, such as the African slaves or indigenous groups, as these groups’ material culture previously was not being considered important to collect and conserve.⁷⁷ Thus, technologies are an integral tool in the visitor-focused museum, one which will be explored in terms of its utilizations in and implications for history museums.

Both strategies for engaging the history museumgoer with history have relied heavily on technology in the museum experience to help visitors become their own interpreters.⁷⁸ As described above, one way has been to take on the identity of someone in the past. The other one, considered by some museum professionals to be more effective, allows museum visitors to be exposed to multiple perspectives in order to allow for their own interpretations. Technologies have been important tools in these approaches as they allow for greater interaction and opportunities for gaining information about the museum itself.

Technology has been utilized as a tool before, during, and after museum experiences for visitors to gain more information about the museum, especially its interpretations and contents,

and has provided ways to interact both inside and outside of the museum environment. Web technology can be used before a museum visit to prepare a museumgoer with information. Technology in the exhibits provides additional, interactive, educational support, and handheld devices allow visitors to access information and interactive tools anytime during their museum visit.⁷⁹ Finally, web-based technology can provide the visitor with information about the collections and updates on the museum long after a visit. Because of this, “In a technological world, the museum visit no longer begins when a person enters the building, nor need it end when she or he leaves.”⁸⁰ The following presents an overview and examples of the different types of technologies that have been utilized in museums and what benefits they appear to bring to provide museumgoers with a more visitor-centric experience.⁸¹

One way technology has been used to improve the experience in history museums has been to prepare museumgoers for their visit. Research has shown that utilization of podcast and other technology before visits allows for visitors to have more knowledge before going to a museum which results in a better museum experience.⁸² This is based on studies by Falk and Dierking who believe that visitors to museums, art galleries in particular, as they were the focus of their research, will be more comfortable, better oriented, and have some idea of what to expect when visiting if they have prior knowledge.⁸³ This is because visitors already familiar with the museum will be more likely to understand the museum’s exhibition narrative, its interpretation, and will therefore be able to take in and comprehend more information.⁸⁴ This is because “a more informed museum visitor is also likely to become more interested, hence engaged, in all sorts of cultural experiences.”⁸⁵ Thus, many history museums use technologies to give visitors information prior to their visit so that they can be better engaged and create their own interpretations during their museum visit, which gives them a more worthwhile experience.

There are several important uses of technology prior to a museum visit, many of which are web-based, possibly due to the relative availability of access to the World Wide Web. Information provided through these web technologies can help potential visitors decide whether a museum will fit their interests or needs. Museum visitors often come with specific visit expectations, whether they are alone or in a group, hence it is important for visitors to know if the museum will satisfy these visit expectations. These websites can help make visits run more smoothly by providing information about hours, location, and at least some information on the museum's contents. Many larger museums also offer visitors the opportunity to purchase tickets in advance or to book customized tours online which helps make the museumgoers' actual visit more efficient as they can avoid lines and therefore save time.^{86,87}

In addition to providing practical information about location and hours, museums often will also have more in-depth information about their collections and museum. Sometimes these websites will even feature offsite links to provide additional information on the region, such as other activities a potential tourist may be interested in or just more general information on the topic. Some websites are even starting to feature various video clips about the museum itself on YouTube or on photo websites such as Flickr that can give museum visitors the opportunity to engage in museum material prior to a visit. These technologies have been used to give visitors more information on exhibits, including the creation of exhibits and the interpretation by the museum, processes that are often hidden during the actual visit. The use of Web 2.0 is one area of technology that museums have been increasingly using throughout the museum experience. Because of its importance for retaining the connection to the museum, its use will be discussed in more detail later.⁸⁸

These websites are important to museums as a marketing tool to attract potential museumgoers through the World Wide Web. This is particularly significant when you consider that creating and maintaining a website can be relatively inexpensive, particularly if a museum worker has some experience, though ones created by professional web developers are best, particularly for large museums. This importance of technology is indicated by trends observed by museum professionals who reveal that most employment opportunities in museums require some background in technology, particularly in the creation and maintenance of websites.⁸⁹

Small museums have been able to use web-based technology to better inform potential museumgoers despite their limited budgets. An example of a simple utilization of this would be by the Floyd County Museum located in Charles City, Iowa. This museum's website lists hours of operation, the location of the museum, and some information about the collections.⁹⁰ This museum has a small staff and budget, but despite this, it is able to run a website. Another even smaller museum, the Carrie Chapman Catt Girlhood Home and Museum, includes information about the museum on its website but also features multiple offsite links to national organizations providing documentation about the women's rights movement and links to the organization's Facebook page.⁹¹ These ways of relaying information about the museum are simple, but effective, as they can begin to prepare the potential museumgoer for the actual visit.

Larger museums also offer a significant amount of information online to allow visitors to prepare for their visit. The Tenement Museum in New York City's website has the opportunity for visitors to book tickets in advance. The visitor can also choose which of seven tour options will best fit their needs, based on the descriptions provided. Visitors can also learn about the area where the museum is located so that they can plan other activities before or after their tour. Potential museumgoers can learn all about the museum, its history, collections, and even ongoing

events. This website includes many other features which will be focused upon later. However, its basic website prepares visitors for this rather traditional museum that uses guided tours, but in its website and abilities to customize, it is quite revolutionary.⁹²

Some museums offer additional ways for museumgoers to prepare for their visit by offering tours or commentary for download onto their personal devices such as an iPod or a Blackberry. These can be listened to in advance and then be reflected on during the actual visit.⁹³ This has only recently become available due to the proliferation of technological devices owned by museumgoers which have certain capabilities that can enable them to download and customize information prior to their museum visit. This technology can give the museum “the ability to steer visitors to the cues and supports that best meet their needs.”⁹⁴ This offers museumgoers personalization as they can customize tours based on personal factors, such as time or interest. These types of technologies may be helpful for educators or others wishing to create a theme or present a lesson. This selection of information can allow a better interpretation by the museumgoer due to the material selected and possible other features. The overall benefits and utilization of these devices will be focused on later as they are primarily to be used during the visit itself, but it is important to mention that they are available for customization, download, and interaction prior to a visitor entering the museum.^{95,96}

Most studies on technology and the museum visitor experience in general have focused on the expanding use of technologies during the actual museum visit. Technology during the museum experience has, in the past, been very important toward creating a more interactive museum experience, and further technological developments have only increased the opportunities available for museum visitors.⁹⁷ There are two main ways that technology has been used to provide these interactive opportunities: being incorporated into the exhibit itself or

as “handheld mobile devices” which in recent years are becoming increasingly multimedia based.⁹⁸ Both of these and their use in history museums will be explored.

One of the ways technology has been used in history museums to facilitate a more visitor-focused experience has been to create interactive displays integrated into the exhibits. Technology has been used in exhibits to engage the visitor, present information, and even entertain the visitor. This can be in the form of pressing a button in an exhibit that will make it perform an action or provide more information, such as the short narrative pieces in the MN150 exhibit and videos built into the soda fountain display at the Minnesota’s Greatest Generation exhibit, both located at the Minnesota History Center. These technologies can also make the exhibits more lifelike and real. The Open House exhibit, also at the Minnesota History Center, features interactive parts within a more traditional historic home, allowing it to be more lifelike as there is a meat grinder which actually pretends to grind imitation meat and a bed which falls slightly when a visitor sits on it. These are utilizations of technology as a tool integrated into an exhibit to present information or perform actions to better engage and interest the visitor.⁹⁹

Technology integrated into history museum exhibits can also be more complex. One example is at the Sullivan Brothers Iowa Veterans Museum in Waterloo, Iowa, which uses laser projections to show World War II troop movements. At the Abraham Lincoln Presidential Library and Museum in Springfield, Illinois, there is even an exhibit that features Holavision® of Lincoln and his contemporaries, a technology which allows actors portraying these men to disappear and fade away as if they are ghosts. This is to illustrate “the exciting sense of discovery that scholars and curators feel as they approach a great research collection,” in effect allowing a museumgoer to feel like a historian.¹⁰⁰ Sometimes these exhibits can even evolve from more audio-based tours, such as the Lyndon Baines Johnson figure, located in the Lyndon

Baines Johnson Presidential Library and Museum, which tells humorous policy-making anecdotes. Technology is added so that, by seeing something that is seemingly lifelike, it makes the past come alive to the visitor. It also enables visitors to gain access to information that can help them learn more about a particular topic in order to form their own interpretations through information and connection brought on through these physical and narrative interactions.^{101,102}

Technology built into the exhibit itself can also be in the form of little minicomputer-type displays, or kiosks, often with touch screens, that allow the museumgoer to get more information by choice at a stationary location in the museum.¹⁰³ These can be used to help facilitate the educational experience in the museum, but it cannot move with the visitors as they explore the museum.¹⁰⁴ This information can take many forms including audio or video clips, in addition to more textual material. These can have a range of interactive components that can help visitors find out more about specific exhibits or topics. An additional benefit of this type of technology is that these kiosks can be used by two or more visitors at a time which helps promote a shared experience and social interaction.¹⁰⁵

An example of this fixed technology is the many computer touch screens at the Jewish Historical Museum in Amsterdam, the Netherlands. These enable visitors to find out more information about specific objects or events and also see various video clips and photographs. These kiosks are located throughout the museum and are very easy to use. They also have the added luxury of a bench which makes the museum visitor comfortable. This type of exhibit lets museum visitors experience history by giving them tools and information so they can interpret it themselves and see their personal story in the larger context.¹⁰⁶ It also allows them to choose what they wish to learn, thus it is a personalized learning experience.

One of the most interesting uses of stationary technology that I have witnessed is at the Anne Frank Museum in Amsterdam. After one goes through the Anne Frank House, hearing the story of the Secret Annex and the history of museum in video clips displaying Otto Frank speaking about the museum's mission, one is invited to an interactive exhibit. This is called "Free2choose" and is described as an "educational programme on conflicting human rights."¹⁰⁷ It was designed to get museum visitors to think about crucial human rights issues by featuring short films from around the world illustrating human rights coming in conflict with other human rights or with democratic ideals. After these short films are shown, the visitors who viewed them are asked a question and are able to vote using a keypad. The votes are counted and the results are shown. This process is to encourage visitors to "think about the arguments that mean they are for or against a particular statement."¹⁰⁸ For example, when I was visiting the museum, I watched a clip about how the popular social networking site Facebook has groups that are composed of those who believe that the Holocaust never happened. The problem with these groups is that it the right of free speech to allow them on Facebook, yet, it promotes hate; hence, a division between human rights and democratic freedoms. When this question was asked to visitors, including myself, in late May 2010, a majority of voters thought that Facebook should end these groups. Thus, this exhibit is interactive as it solicits feedback for the visitor to interpret and reflect on what they have experienced in the museum which portrays a violation of human rights committed by the Nazis during World War II. This provides an experiential and visitor-focused approach that allows visitor interpretation as it encourages analysis and response.

Though the use of stationary technology in museums has been popular, mobile devices and their innovations have been more widely utilized within the museum environment in recent years. This is because "written or spoken text remains one of the most efficient ways for humans

to learn new facts and stories.”¹⁰⁹ These types of guides also provide information throughout the museum experience as they are mobile, hence one can walk around the museum and still receive information.¹¹⁰ However, in looking at this technology, it appears as though audio guides were the past, and newer, multimedia, mobile devices are the future. Whereas traditional audio guides have been able to provide extra information to museum goers, the future ones offer new capabilities to further create a personalized, collaborative, museum experience.¹¹¹

Audio guides were some of the first technologies used in museums. The first use of such handheld audio devices was in 1952 at the Stedelijk Museum in Amsterdam, the Netherlands. This device was in the form of Short-Wave Ambulatory Lectures, which were identical lectures in different languages: Dutch, French, English, and German. All of these lectures were broadcast synchronically throughout the museum galleries and received on the visitors’ personal portable radios. This technology helped preserve the museum’s object-based approach as it focused on the objects and the information as prepared by the museum staff. However, technology of these audio guides later improved in terms of hardware to tours which featured taped cassettes such as those utilized in the 1970s touring exhibit, “Treasures of Tutankhamen.”¹¹²

Technology later improved to the audio guides that are common today throughout museums and historical sites that use microchip technology. These feature information on the museum’s objects but also allow a visitor some choice with the availability to stop, start, pause, advance, and select certain artifact information, often by utilizing a numbered keypad. These types of technologies offer standard information but have evolved from being at one set time following one set path to a visitor able to have some control. Examples of this type of museum technology are quite common; they are frequently found at every major museum and historic site in the world, from the Vatican to the Smithsonian, and even at the Forbidden City in China.¹¹³

Though audio guides have been the traditional mobile device in museums, technological innovations in the past ten or so years are rapidly changing this field. In just fifty years, “handheld technologies have gone from simply offering custom content on a standardized device set functionally — the audio guide — to offering custom content on different hardware platforms with custom functionality suited first to the museum but increasingly also to the visitor.”¹¹⁴ This refers to multimedia tours which have developed as new technologies have been created. In 2002, the Tate Modern Museum had the first wireless multimedia tour, with other museums slowly following. It has been since 2005 that the number of these technologies has increased, with some museums replacing traditional audio offerings with them for both their temporary exhibitions and permanent collections. This is because new technologies like personal digital assistants, such as Blackberries; smart phones, such as the iPhone; and portable music players, MP3 players, such as iPods have new capabilities which can further customize a museum visit. Sometimes these technologies can even connect to the internet through means such as Wi-Fi. These technologies offer new types of audio, visual, as well as interactive capacities and are classified as mobile, digital, and personal, offering the museum visitor a customized multimedia museum experience. Together, these are known as mobile digital technology.^{115,116, 117}

The research and utilization of mobile technology is still in its infancy.¹¹⁸ At the moment, it appears as though many of these technologies are available on personal devices owned by museum visitors but not for rent in a museum. For example, a museum visitor may bring their own smart phone with a multimedia tour already downloaded. However, as these technologies become more prevalent, museums, including history museums, will begin to acquire them as permanent fixtures available for museumgoers to borrow or rent, or even have

docking stations so museumgoers can download information if they have not done so in advance, all in an effort to utilize the benefits of this technology.¹¹⁹

One benefit of multimedia technologies is that they allow visitors choice and options over their museum experience. These technologies can offer such personalized museum experiences because they are, in effect, a portable computer terminal, granting visitors access to information or activities that they want, when they desire them.¹²⁰ As previously mentioned, museum visitors can download multimedia tours and even customize tours from museum websites or other providers prior to their museum visit.¹²¹ Because this information is frequently on a visitor's own device, they can even save it for later reference or use.¹²² In the museum itself, museum visitors are given the choice of what type and how much information they wish to learn through content selection on the device.¹²³ With mobile digital technology, museums can allow for a personalized museum tour characterized by the visitor's freedom to choose what to learn, with multiple entry points into the information presented by the museum, allowing for structure as the information presented is still prepared by the curators. This is also important as it can help cater to diverse learning styles as well as people seeking different levels of information, from those who just want a basic understanding of artifacts, to those who want in-depth knowledge.¹²⁴ In addition, this technology will differ across museums as the "level of interactivity and the supported multimedia content types vary according to the specific needs of the institution as well as the kind of device adapted."¹²⁵ Because of the ability for the visitor to choose what they learn and how they learn it, this utilization of technology is a benefit to the creation of a more visitor-focused and interactive museum experience.

The choice over what information to learn and how to learn it will best allow a nonlinear personal learning experience, far different from the more linear general one presented through

audio guides, and as a result, this new multimedia mobile technology has been shown to better facilitate a free-choice learning environment. This is because it provides multiple entry points into the museum as created by the curator. In informal learning environments, such as museums, it has been shown that visitors learn more if they are given a choice over what they learn, which is why this approach is important; it allows museum visitors to take their personal story or connection to the history museum and broaden it to new perspectives. This technology helps museum visitors fulfill their needs for “a personally meaningful, relevant experience in which they feel in control.”¹²⁶ Overall, research has revealed that visitors who use multimedia tours, thereby creating more of a free-choice learning environment, show a deeper level of understanding and critical thinking, have more extensive learning experiences, make more connections to their own history and background, and engage in greater personal learning.^{127,128}

Multimedia technology also provides greater access to “the intellectual and cultural resources of a museum.”¹²⁹ Museums can show by using these devices objects that are in storage or located at another museum that may be related to a particular exhibit. Visitors also can gain access to information from the curators of the museums to learn about the museum’s interpretations. Particularly in history museums, technology can be used to listen to narratives and oral histories, as well as show film footage connected to the exhibit. Additionally, these multimedia technologies can have photographs, music, and even passages of text from related material about exhibits and objects. All of these forms of information are combined into these mobile digital devices and are “available to the visitor at the touch of a button.”¹³⁰ With these technologies, it is often less difficult to update them due to their various internet capacities, so it is easier for the visitor to stay informed about new discoveries and information pertaining to the museum’s topic. This allows for visitors to further customize their museum experience and

relates to being able to better meet the intellectual needs of the visitor due to making available more information at different levels of understanding. Thus, a benefit is being able to provide a larger variety of information to the public and also provide new and different sources.

Another reason that these technologies of personal digital assistants (PDA), MP3 players, and mobile smart phones are considered to be the future of museums is because they have a very audio-visual nature. Many of these different technologies also have overlapping technologies, such as the advancements on mobile phones, such as the iPhone, or other similar devices which integrate the basics of mobile phones with internet technology, MP3 players, and PDA technologies. Therefore, mobile digital technology can be used to have not only a traditional audio tour but also can furnish images, videos, and games, as well as additional content available through the internet. It has been shown that by the use of labels to give basic information about museum objects and the use of multimedia to illustrate aspects of the object's construction, purpose, and operation, museums are able to provide more information than what could be gained from just looking at the traditional printed label or the object itself. This helps aid in the learning process as it has been shown that the use of several different channels of sensory information at the same time can allow for a learner to retain about three times the information than with just one channel. Hence, by allowing visitors to both listen to and see information, even read it, there is a greater possibility of retention. The use of audio and visual materials may also help adapt to different learning styles, as people learn through different means.^{131,132}

The ability to choose what information to view, the creation of a free-choice learning environment, access to more information, and the audio-visual nature of digital mobile technologies all combine to offer museumgoers more personalized experiences. This is because this technology can offer “personally” and “immediately” relevant information from the digital

world, such as text, sounds, pictures, and video to museumgoers, all to illustrate the exhibit for the “visitors’ individual perspectives.”¹³³ This type of technology offers a large amount of personalization as visitors can choose what they want to see or learn and whether they want more or less information, as information is “differentiated according to the specific needs and characteristics of each visitor.”¹³⁴ All of these can also lead to better interpretation by the visitor.

These mobile digital devices also have been popular because they incorporate modern technology which many people, particularly young people, enjoy and are familiar with.¹³⁵ These technologies are developed with the idea that new technology can help the public, particularly the younger generation, learn about “old stuff.”¹³⁶ For this reason, this technology appeals to museumgoers as it is something familiar either in the form of their own personal device or one they can easily use from the museum. With technologies, young people are encouraged to explore museums, particularly artifacts, in a more dynamic and participatory way through the aid of various interactive features which multimedia technology can integrate, such as games, questions, and photographs.¹³⁷ Younger generations are particularly used to having technology with entertainment and multimedia components as a part of their daily life, both in the classroom and in their leisure-time activities.¹³⁸ This is important as more generations are familiar with technology being integrated in formal learning environments in addition to leisure activities more associated with fun and entertainment.¹³⁹

These new multimedia guides further facilitate the museum process by allowing visitors to interact with content. It is to be remembered in this new approach that “every museum visitor is a story teller with authority.”¹⁴⁰ Multimedia technologies are a new way that visitors can gain authority in their own learning experience by being able to construct, collaborate, and share parts of their visitor experience by interacting with content. New mobile, digital, handheld devices

have numerous potentials to enable this. These technologies, at their very basic, can have questions to solicit visitor thought, be they open-ended discussions or multiple-choice problems. These empower the visitor by asking questions and widening understanding, while also stimulating “interaction, exchange, and participation.”¹⁴¹

New technologies can even have games that allow visitors to perform tasks, explore certain areas, or test their knowledge about a subject related to the museum. These function very much like computer or video games, but they relate in subject matter or content to the museum and can be a fun, as well as interactive, means for visitors to learn about and even be a part of certain concepts or ideas presented in the museum. This type of technology aids in interpretation as it presents opportunities for museum visitors to analyze and reflect on their information in a structured and effective manner. This technology shows great potential with school groups, and with children in general, as a means to check for understanding while also being fun, due to the utilization of familiar technology considered entertaining. Research based on a game used at the Gallo-Roman Museum in Belgium has indicated that games have a great potential for engaging visitors, particularly the young. In this museum, school groups participate in a collaborative trading game which allows students to gain and enhance goods by answering questions or by completing short exercises. This game is designed in a way that players are dependent upon each other which enables both social interactions and collaboration. It also was found that interactive content, such as games, quizzes, and opinion polls, are not only popular educational material, but also are the most successful in increasing the engagement of students with objects. Based on this study and others, the use of games on mobile museum technology may prove to help encourage interactive and collaborative learning environments.^{142,143}

Visitors also can contribute to the museum narrative as new technologies allow for the sharing of responses and viewing of others' reactions to or about the museum's contents. This is taking the previous example of the Chicago Field Museum of Natural History soliciting responses — but digitizing it. Museums want to design this type of technology to allow for the possibility of social interaction as it is believed that “visitors need to know what their companions are seeing or hearing, and conversations must be possible.”¹⁴⁴ Mobile digital devices can enable conversations and interactions with other visitors. One possible means is for visitors to text or instant-message other museum visitors about the museum content. Additionally, visitors can comment and view others' comments on objects or exhibits by utilizing the mobile technology. By doing this, visitors can respond and react to both the museum content and to other visitors' comments. This helps visitors have social interaction while also being able to use their mobile devices and have a personalized museum experience.¹⁴⁵

The qualities of technology allow museum visitors to interact with content on an even deeper level by tagging, also known as bookmarking, items. This refers to when museum visitors “tag” an artifact to be available online for later reflection, editing, and even sharing with other museumgoers. This is done by visitors using internet-enabled technology or even mobile phones to tag particular exhibits or collections by sending text messages for later retrieval of information on the web. After their visit they are able to enter their mobile number on the museum's website in order to get a list of all of the exhibits that they had tagged along with linked topics or themes relating to these indicated interests. This is thought to be beneficial as it can allow the visitor the option to learn more outside of the museum environment. Research also has indicated that the repetition of tagging items supports the learning processes in a museum as repetition can help museumgoers retain more information and memories from the museum. This

helps create a more visitor-focused museum process as it gives visitors opportunities to interact with content for their own and even other's personal use.^{146,147}

Mobile digital technologies also enable visitors to contribute other forms of content to the museum and other museumgoers. A visitor can take pictures, tag them, comment on them, and then upload them online for sharing to an audience, be it a classroom or the wider museum community. These types of technologies are important as they allow the visitor to interact and take authority over their museum experience by being able to choose what interested them, document these interests, interact with others, and allow for the continuance of all of these beyond the museum setting. All of these can allow for visitors to construct, collaborate, and share their museum experience. Furthermore, the ability to comment on and upload information to a museum website, or even to a classroom webpage, allows for greater visitor contribution and collaboration within the museum environment. With this, visitors can more easily share their thoughts and reactions with those they know, such as their fellow classmates or with more general museum visitors. This is significant as learning, as understood by museum professionals, is "driven by the interplay between internal and external conversation, mediated by the changing context and the external shared media."¹⁴⁸

Overall, feedbacks and interactions on these devices can allow for further interpretation by soliciting reflection and comprehension from the visitor. This is in addition to access to more information and to a personalized, free-choice, learning environment. For museums themselves, this technology is appealing as their visitors are frequently already familiar with it and are likely to have beneficial experiences with it. Giving museumgoers better, more positive, and memorable museum experiences within the museum by using this technology is significant for

museums, in addition to museumgoers, as museums wish for visitors to come back and maybe even become donors to support the museum.¹⁴⁹

Despite the many advantages that lead to providing a more visitor-focused, interactive, museum experience, the adaptation of mobile digital technology as an interpretive tool has been quite slow, particularly in the United States and in history museums in general. There have been some successful utilizations of mobile digital technology, for example, at the D-Day Museum in Portsmouth, the United Kingdom. Here, students have used mobile phones with personal identification codes to interact with MyArtSpace, a multimedia mobile digital device with internet technologies. With this device, students take codes from exhibits that are then downloaded onto a student's personal website for later discussion, sharing, and reflection. In addition, the device has capabilities for students to take pictures, record audio, and write text comments, which are also sent to their personal website. Though there has been significant research and trials done using these technologies, they are far from being a permanent tool in museums, particularly for use by museumgoers other than students.^{150,151}

Few museums, particularly in the United States, have adapted to these technologies, yet there is evidence of its upcoming implementation. An interview with Wendy Jones, the manager of the Minnesota History Center, revealed the future of this type of technology at the institution. In 2012, the museum is to begin utilizing mobile digital technology for school groups. This is so that these students can interact in the museum environment and with the museum environment in new ways. This technology will allow students to solve problems, record their thoughts, take pictures, and download parts to take home or back to the classroom, all of which can extend their experience. The museum hopes to begin by offering this technology for school groups and other children, but then maybe expand it eventually to young adults and adults. However, the choice

to focus on children first is because they tend to be a large demographic at the Minnesota History Center, particularly within the education department, as many school groups visit the museum.¹⁵²

These mobile, digital, multimedia-based technologies seem to be the future within the history museum environment for their many benefits which will appeal to a generation familiar with technology. Though traditional, integrated technology, stationary kiosks, and audio guides may still remain, it is possible that more visitors will start to have greater expectations for newer technology. Additionally the benefits of mobile digital technologies, particularly their personalized, interactive content, make it so that their utilization may become necessary for museums to survive in an increasingly competitive market. In terms of the utilization of technology within a history museum, it is probable that change will happen in the next few years. However, it is important to remember that some history museums and historic sites, particularly living history farms or historic homes, may not lend themselves to this type of technology.

A goal for most museums is for visitors to make return visits and to maybe even eventually become donors or members of the museum, as most museums are nonprofits or receive very little government support. To facilitate this, museums use technology to help maintain connections with former visitors by keeping them aware of the museum, its activities, and even offering additional informational content. Much of this technology is based on the World Wide Web as it can offer maintained contact with museums through its networking capacities and continue to provide information long after one has visited. By looking at different technologies and their uses, it can be shown that even after the museum experience technology enables history museums to further their interaction with visitors in order to promote a more visitor-focused museum. In turn, this prolonged interaction benefits the museum as it provides a form of advertisement, discourse, and even financial support.¹⁵³

This use of technology in museums has been particularly enabled by Web 2.0. Web 2.0 refers to the way that social media applications allow for “dynamic user participation, information exchange, and other sorts of user-generated content and collaborative authorship.”¹⁵⁴ Websites and internet applications that exemplify this would be Wikipedia, Facebook, Twitter, Flickr, and YouTube.¹⁵⁵ Museums have been quick to utilize these Web 2.0 technologies, as they are often inexpensive and effective ways to maintain contact with visitors.¹⁵⁶

In order to understand what type of Web 2.0 technology may work best for museums surveys have been done that focus on the way in which the public uses the online world. Research has created a social technographic profile tool to help businesses understand the way different audiences engage with social media online. This research grouped online audiences into six categories of internet users. Creators, found to be 24% of users, are those who produce content online by performing such activities as uploading videos and writing blogs. Critics, found to be 37% of users, are those who perform activities such as rating content and submitting reviews, such as of consumer products. Collectors were found to be 21% of the population and are those who organize links and content for their own use or use by others, such as the creation of wish lists on Amazon. Joiners comprise about half of the population, 51%, and are those who maintain accounts on social networking sites, such as Facebook, or even more professional ones, such as LinkedIn. Finally, the largest percentages are spectators, 73% of the population, who are those who read blogs, visit social sites, and watch YouTube videos. Finally, there is a small percentage, 18%, who do not visit social sites. These numbers add up to over 100% of the population as many people engage in different types of online Web 2.0 activities. It is easy for a person to belong to Facebook, watch and rate YouTube videos, and read a blog. However, far fewer people add online content, such as posting blogs or photos. The “90-9-1” principle

actually states that “in most online communities, 90% of users are lurkers who never contribute, 9% of users contribute a little, and 1% of users account for almost all the action.”¹⁵⁷ All of this information is significant as it shows how people engage with Web.2.0 technology which can aid history museums in understanding how visitors might interact with online content. From this, it appears as though people may visit websites, but not necessarily interact with or on them. For example, one might visit the Minnesota Historical Society’s Facebook page but not comment on its statuses.¹⁵⁸

One of the online technologies long used by museums is the eNewsletter. These letters take the concept of the basic newsletter but in an e-mail form which those interested can subscribe to online. This type of technology is appealing for the museum because it is less expensive than the traditional newsletter as there are no additional paper or postage costs. ENewsletters often feature updates about events and exhibits at the museums and may feature articles about particular exhibits or general historical information. Additionally, the eNewsletter is more directly delivered via email which can benefit the museum and the visitor as it provides information quickly and efficiently. ENewsletters, though a simple form of technology, are widely utilized by museums especially as they are accessible to even the smallest historical society. The Minnesota Historical Society uses an eNewsletter and even lets subscribers select their interest, such as “Local History News” or “History Education News,” to further customize their information.¹⁵⁹ This offers customization in addition to convenience.¹⁶⁰

The popular social networking site, Facebook, has been increasingly utilized in the past few years by museums and historic sites.¹⁶¹ This is because it is free and reaches an increasingly growing and diverse public; as of July 2010 there were over 500 million active Facebook users spending a total of about 700 billion minutes a month on Facebook.¹⁶² Museums, including

history museums and historic sites, have created fan pages to reach this large base of potential and former visitors. A fan page is a “customizable presence for an organization, product, or public personality to join the conversation with Facebook users.”¹⁶³ A fan page enables a museum to post content on their site to engage and inform their fans, the Facebook users who have chosen to follow their page. This material also appears on fans’ news feeds to keep them informed. Additionally, other Facebook members can see when their friends become fans of a particular museum and may become interested in the page by seeing this content. Fan pages have much potential to reach museum visitors or those just interested in a museum as it is indicated that an average Facebook user has 80 fan pages.¹⁶⁴

The type of content that museums can use via their fan page varies greatly, from informing the public to interacting with them. At the most basic, they can post status updates about what is going on at the museum. For example, the Carrie Chapman Catt Girlhood Home and Museum, a small, volunteer-run museum coordinated by the National 19th Amendment Society, posted on August 14th of 2010, “Celebrate the 90th anniversary of suffrage equality! Join us at our open house next Saturday, August 21, 11 a.m. to 4 p.m. Admission free.”¹⁶⁵ Museums can also post content that may interest their visitors, such as video clips, articles about the museum, or additional historical information related to its collections. The Minnesota Historical Society does this almost daily, frequently focusing on historical information relating to current events, such as posting voting instructions from the 1920s during the fall 2010 election.¹⁶⁶

Museums can even use Facebook to interact with their visitors through fans’ comments on their status, wall posts, and uploaded pictures. Museums can ask their fans questions or even play games using their Facebook status. For example, the Minnesota Historical Society

occasionally asks its fans to identify particularly obscure artifacts. Museums can even invite fans to upcoming events, something which provides an inexpensive form of publicity. The National Museum of American History, in fall 2010, used Facebook to invite the public to its “Day of the Dead Family Celebration” by listing all information a visitor to the event would need.¹⁶⁷ The Anne Frank House in Amsterdam has even managed to create an application, a program, to allow fans to put Anne Frank quotes on their Facebook wall.¹⁶⁸ These are just a few ways museums have utilized Facebook to interact and engage with their audience as it allows the sharing of information, creation of discourse, and the sharing of content by users, fans. Often museum visitors can easily find these Facebook pages as most museum websites have links to their Facebook official fan page. This facilitates and advertises the utilization of Facebook by museums.

Museums also have utilized YouTube to create videos that can attract potential and former visitors to museums. YouTube is a video sharing website that allows anyone with an account to upload short video clips which then can be viewed and commented on by the general public.¹⁶⁹ Uploading these videos is free; however, there may be production cost in creating the videos for museums. Museums, history museums included, have used YouTube technology to create short pieces about upcoming exhibits, objects in the museum, and even what goes on “behind the scenes” of a museum. This provides educational materials in an online format easily accessible and entertaining to the audience of museum visitors, which may be after or prior to the actual museum visit.¹⁷⁰ This information can help interest these museumgoers in events at the museum and may help better inform them about materials inside of the museum, including the museum’s process of interpretation. Those who watch the videos can likewise comment on them

and view comments from others. This allows for a better engaged and informed museumgoer that can even lead to further discourse.

Many history museums have utilized YouTube, often having an icon and link available from their main museum website to direct visitors to the museum's YouTube channel. The Minnesota History Center has a YouTube channel with around one hundred uploads that range from actual clips from events, to information on specific historical events, and even to features on the collections, including information on how it collects, preserves, and interprets various objects from collections.¹⁷¹ The Anne Frank Museum's YouTube channel features a virtual tour and interviews from the museum director about creating the virtual tour.¹⁷² The Tate Museum, an art museum in England, has even used this technology to produce their own documentary art films which they then broadcast online.¹⁷³ Clearly, YouTube can provide many multimedia opportunities for museumgoers outside of the museum. This allows museumgoers to learn more about their interest by choice and even be able to learn more about the interpretative process in museums which, along with the ability to comment, can help further the process of giving the visitor more information and authority through content contribution.

Museums also have used Twitter as another Web 2.0 medium. Twitter is a site where people "tweet" updates throughout the day of activities, thoughts, or whatever they feel; it is up to the discretion of the user.¹⁷⁴ Twitter is free, offers opportunities for custom design of individual twitter sites, and allows users to follow other twitter pages. Twitter is helpful for museums because "it can be used to quickly share information with people interested in your company, gather real-time market intelligence and feedback, and build relationships with customers, partners and other people who care about your business."¹⁷⁵ Thus, museums can "tweet" about events, solicit feedback from their visitors, and even engage in games. In this

sense, a museum's use of Twitter is similar to the use of status updates on Facebook. Many museums have utilized Twitter. For example, the Minnesota History Center "tweets" about events, features an object of the day, comments on current events, and even asks questions such as "What unique plant was processed in Holt, MN, to aid the war effort in WWII?"¹⁷⁶ Twitter is helpful to museums as it is inexpensive and can be a great way to engage with, as well as receive feedback from, an audience. Tweets are helpful for museumgoers to follow along with events and engage with the museum, this can help lead to an extended interest in the museum.

Some museums have used Wikipedia technology to allow for visitor contributions. In this basic technology of Wikipedia, anyone can upload information and pictures to share with others on the website, accessible through the World Wide Web.¹⁷⁷ The Minnesota Historical Society used this technology in the creation of their website, Placeography. On this website, people from all over Minnesota, and places beyond Minnesota, are invited to upload information, stories, and photos about where they are from or places they have been.¹⁷⁸ This is in an effort to share information and personal stories with others. This allows visitors to the site to learn through each other's content contributions.¹⁷⁹

The final, main site that museums have utilized is Flickr. Flickr is a photo-sharing website where individuals or organizations can upload photos and make them available for viewing to either the general public or approved individuals. Museums have used this to upload pictures from events or from their collections. This can make collections more available to the public as museumgoers can see collections that may not be available because they are in storage as most museums can only display a fraction of their collections at a time. Also, visitors have the opportunity to view collections on display better as photos can be taken closer, thus allowing details to be clearer and enhanced. Museumgoers can see pictures from events that they have

attended, while also adding their personal photos from museum visits. For example, the Chicago History Museum had a recent exhibit on women's fashion and uploaded high resolution photos from the exhibit onto Flickr. These photos enabled visitors to see many details on the clothing that may have been indistinguishable in the actual exhibit due to distance or the protective casing. This is important for the visitor-focused museum approach as it gives museumgoers greater authority to explore and view the museum's collections on their own terms. In general, many museums have been digitizing their collections and archives which has allowed for visitors and researchers to have greater access to information online.^{180,181,182}

Besides the many Web 2.0 technologies and networking sites, museums also have aided museumgoers by making podcasts available online. These podcasts can take many forms besides the previously mentioned tours. Oftentimes, in the context of an out-of-museum environment, they are presented as a series of interactive, often multimedia, lectures, a podcast series, or as public programming available online. These podcasts, in the context of a history museum, can feature interviews with museums curators, presentations on historical information, or oral histories. These podcasts can be tailored to a visitor's needs, which is important in meeting a diverse audience. Research on podcast use has found that people will use these podcasts as long as they are relevant to their specific needs, rather than if they are just simply distributed.¹⁸³ Because of this, it is important that history museums make sure to use podcasts that are interesting and beneficial to museumgoers, rather than just utilizing it for technologies' sake.

The basic features of podcasts also lend themselves to amplifying a museum experience either before or after a visit. Podcasts are good for visitors because they can keep them updated on information and ongoing academia at the museum, but instead of needing to be tied down on a computer, they can ride in the car, go to the gym, or do any number of activities. Podcast

technology is also familiar and appealing to the younger generation and is increasingly owned by a large percentage of the population in Western Countries. These podcasts can be used prior to a visit, during an exhibit, and after a visit; the use of a podcast depends greatly on the interest of the museumgoer and its use by the museum. Another reason podcasts have been so successful to the visitor-focused approach is that is that they “tend to be more chatty and conversational compared to the traditional scholarly voice of the museum.”¹⁸⁴ This means that they are better geared towards a more popular audience, rather than the academic elite. This is in addition to their personalized capabilities, as podcasts can let museumgoers gain more information about the museum’s interpretative process and about the museum in general, which can help interest and engage the museum visitor long after their visit. All of this helps provide for a more customized museum experience with information that may be personally relevant to visitors.¹⁸⁵

Additionally, the content of these podcasts can “integrate the voices of visitors or other relevant individuals who are not necessarily employed by the museum itself.”¹⁸⁶ Podcasts have been used, for example, in art museums to allow visitors to hear previous visitors’ reactions and interpretations of art. Art museums also have used podcasts to allow for artist interviews or artist-led tours. Sometimes art museums will even hire actors to portray a long-dead artist in a podcast series that will illustrate both the artist’s work and life. In the environment of a history museum, podcasts could potentially be utilized to share visitor reactions, interpretations, and viewpoints on historical events. History museums could also use podcasts to share more primary sources and oral histories which can be particularly effective in creating personal connections to the material for the museumgoer.¹⁸⁷

One example of podcasts offered by history museums to be used outside of the museum setting would be those offered by the Chicago History Museum. This museum has podcasts that

match up with a series of books, one for elementary students and the other for high school students. Thus, these podcasts offer a way to engage a very technologically-focused generation. These stories and podcasts are also able to engage with an interactive map which allows one to visit important locations from the story while also listening to it. These podcasts and the supplemental materials actually won a 2008 Gold MUSE Award for Teaching and Outreach from the American Association of Museums Media & Technology Committee. These awards are given to recognize achievements in museum media which often focuses upon and utilizes various museum technologies.^{188,189}

A historic site with a more adult, content-based podcast, and the video-based vodcast, is Colonial Williamsburg with its long running podcast series, “Past and Present.” This podcast has existed since 2005 and is an effort to take museum visitors behind the scenes of the museum by meeting interpreters, historians, curators, and many others. The content varies from features on horses at Williamsburg to the history of pirates in the area. An online visitor is able to search different podcast categories to find one of interest. These podcasts are available in a traditional audio-only podcast, another that has audio and a slideshow, and another that is a video podcast, a vodcast. These podcasts won a Silver MUSE Award for Podcast in 2009 for the flexibility that they offer and their ability to offer audiences a look behind the scenes.¹⁹⁰

Museum websites can offer numerous resources for a museum visitor after their visit by helping them stay engaged with the museum and allowing them to learn more. Museum websites also can offer educational materials that can be used in the home or classroom. Many history museums have online educational materials for teachers in the form of worksheets and games for download.¹⁹¹ These were formerly offered in educational packets by history museums but are increasingly available online, making them more accessible for teachers and also less

expensive for the museums as they can avoid printing costs.¹⁹² These educational materials often help students reflect on their experience at the museum. Besides these more traditional approaches that have been integrated with online technology, history museums also offer online games that are related to or simulate an experience connected to the topic of the museum.

The Tenement Museum in New York City has both games and interactive activities online. For classroom use, it has lesson plans for educators to teach about using objects to understand history and about the importance of oral history. These are available at different grade levels, making them accessible for many students and teachers. There also are activities that utilize primary source materials, available for download on the website, for students to use to learn to be their own historians and piece together the past. The museum also has a more technologically based game, the Immigration Game. In this game, children simulate and learn about immigration to the United States. They first watch a video clip to place them in the context of the time. Children then choose an immigrant background and name out of a list of several options. Children are also able to choose what they are bringing to the United States and, once in the United States, are asked questions to get through Ellis Island. Throughout this game, footage from a young museum interpreter portraying an immigrant named Victoria is shown talking about the immigrant experience for a child. Children are able to interact with the different items in the Tenement House to learn what everyday life was like. Finally, at the end of the simulation, children are given the option of sending a postcard, in reality an email, to themselves or to others. This game is innovative as it incorporates choice, from the child playing the game, while also integrating historical information. Because this activity is very interactive, while also being content-based, it allows for an engaging experience outside of the museum.¹⁹³

Though there are clearly many ways that history museums have been using web-based technology to engage museumgoers beyond the museum, there is one particular use that I found especially interesting. On the Anne Frank Museum's website there is an online memorial to Anne Frank in the form of a virtual tree. Visitors can leave a leaf in the virtual tree and can include a message. This tree is made up of virtual leaves from all over the world, over 500,000 leaves as of October of 2010. This virtual tree is particularly significant after August of 2010 when the real tree that this one represents fell down and had to be removed. This use of technology allows visitors to reflect on their experience and connect it to the larger themes in the museum. This enables visitors to express their thoughts and opinions to the public worldwide about this instance in history and their personal connections to it.¹⁹⁴

Museum technology has gotten so advanced at trying to engage the visitor in their experience that it is almost possible that people no longer need to even visit the physical museum. This is because more museums are offering so much information online, particularly in the form of virtual tours. With better technology, including broadband internet, multimedia technologies, and 3-D graphics, these virtual museum tours have become more realistic and efficient. They allow people to visit many museums throughout the world, from the Vatican Museums to Jamestown. Virtual tours are beneficial as they give people the opportunity to visit a museum that they may never have a chance to visit, particularly those who cannot visit due to economic reasons, especially the cost of travel. People may also not be able to visit museums due to physical barriers that make it difficult to travel. Additionally, these tours can supplement other tours as they can allow museum visitors the possibility of having a better view and also an interaction with the artifact. However, the virtual objects will never be as true to life as the real artifact, visually, and cannot replace the excitement at seeing artifacts from history within a

museum setting. The virtual tour also cannot replace the reality of the museum environment and the social interactions that can occur within a museum. They are still helpful for the opportunities they provide to those unable to visit some traditional museums.^{195,196}

A good example of a virtual tour in a history museum is the Tenement Museum in New York City's virtual tour. This tour provides the opportunity for a virtual visitor to see the entire tenement building and its apartments with 360-degree views and the potential to move around within the virtual space. The space itself is augmented with an audio tour and written text that tells more information about the apartments and the families who occupied them. Though this virtual tour cannot replace visiting the actual museum in New York City and receiving a guided tour by an interpreter, it gives one the opportunity to see a space without leaving home.¹⁹⁷

Advantages and Challenges of the Use of Technology in History Museums

The use of technology before, during, and after the museum visit to help provide the history museumgoer with a more visitor-focused and interactive museum experience certainly has many benefits as enumerated throughout this paper. These include the ability to personalize to fit diverse museum visitors' needs and interests, which can allow for a more customized museum experience. Museum visitors also are able to have greater choice over what they do and learn in the museum setting. This is especially beneficial in creating free-choice learning environments to promote greater learning and understanding. Museum technologies are also beneficial in providing greater opportunities to integrate visitors into the discourse surrounding museums and allow for visitor-created content. All of the above allow for a more visitor-focused museum.

These new types of technologies also give museum visitors more access to information about the objects and about the museum's interpretative processes. By understanding the interpretative processes of museums and by finding out more information about the museum's focus, museumgoers are able to come to their own conclusions as well as be able to connect their personal history with the larger scope of history. This and more information by choice can lead to better individual interpretations and new understandings. Museum technologies also enable visitors to prepare for their visit, giving them greater understanding while at the actual museum, and also allow for visitors to find out more information after their museum visit ends. Overall access to more information, in this sense, leads to greater visitor understanding and interactions. This is important because, as previously mentioned, people are able to best connect to history by being able to see their own personal stories or those of others in it.

Technology is also a great way to keep museumgoers interested in museums. Though museum visitors are able to read text, technologies offer new ways to engage visitors and to solicit feedback from them. Technologies can be quite appealing as they can add an element of entertainment to the museum exhibits, be it by allowing an audio presentation of oral history or to allowing visitors to interact with each other on mobile devices that allow for games and photo taking. This element of entertainment is particularly important as technology is used more in daily life, particularly for younger generations who are used to a life integrated with technology.

However, despite the many benefits, there are some very significant disadvantages to the utilization of technology in museums. One is the overall cost of these technologies. Although some technologies, particularly those utilizing the World Wide Web, are relatively inexpensive, other technologies can be incredibly expensive.¹⁹⁸ This is because, to create technologies, such as audio guides, multimedia guides, and stationary kiosks, a significant amount of research and

development is needed in order to ensure quality so that the technology actually amplifies the museum experience. Content development is the most expensive aspect of creating these; audiovisual resources and interactive materials are expensive and time consuming to produce as many people must be involved: designers, programmers, usability experts, to name a few, in order for it to be well-designed for visitors. Besides this, the cost of the actual hardware of the technology can add up as can potential copyright costs for the use of some multimedia materials. For a museum to have a large enough number of mobile digital guides or to install an exhibit utilizing technology, costs can run into thousands of dollars, at least. Cost also must be considered in maintaining these technologies, providing care to ensure that they are working properly, as well as fixing those that become broken or need a replacement. Staff members must also be able to know how to use these devices and also how to explain their function to visitors, which means more training for staff members. These related costs to increase technology in museums can quickly add up, though the benefits may outweigh the actual cost in the end.¹⁹⁹ Additionally, it is important to remember only certain technologies are expensive, so for museums who may not be able to afford these, there are less expensive options, such as websites.

Besides the many costs, these technologies also experience a rapid turnover rate. As mentioned previously, technologies have been changing significantly over the past thirty years; this is evident by the recent change in museums from audio guides to multimedia, mobile, digital devices. In the museum environment, this turnover can be an additional cost as well as making certain aspects of the technology incompatible with other programs used by museums. This is evident in an example given by a museum professional, Angi Reid. At a conference Reid attended, another museum professional shared how the museum had digitized all of its photographic archives onto floppy disks, but by the time that had been accomplished the floppy

disk was obsolete. Reid believes that, due to technology constantly changing, archives of photographs and digitized collections may need to update their technology every 3-5 years. From this, it is clear that turnover can be a process that costs both time and money.^{200,201}

Another possible drawback is that the technology may not be useable by all museum-going populations. This is because some museumgoers, particularly older visitors, may not be familiar enough with technology to be able to utilize it. Older generations have not grown up with computers, mobile phones, or portable music devices. As a result, they may not know the basic mechanics of the technology available, whereas for younger generations, who have grown up around technology in and out of the classroom, technology can seem like almost second nature. Older generations may not use the technology or may experience difficulties utilizing technologies simply because they are unfamiliar with them. When I interned at the Carrie Chapman Catt Girlhood Home and Museum, I often had visitors who appeared to be over the age of 65 struggle with using the iPod tours available there. Some of the visitors would stop trying to use the iPods and instead have a companion relate the information to them. For this reason, providing good instructions and continuing to offer non-technological alternatives are needed in order to facilitate the visitor experience within the museum environment.^{202,203}

Though access of information is an important benefit of technology in the museum experience, it can also be a drawback. This is because museum visitors can quickly become overwhelmed with too much information, particularly if it does not relate to their interests. This is referred to as a “cognitive overload.”²⁰⁴ Dr. David Davies has observed that visitors may just ignore information presented by technology due to its sheer volume.²⁰⁵ Thus, it is important to integrate technological capabilities that will help visitors find information that relates to their interest, rather than becoming overwhelmed and fatigued by too much information.

There also is some worry that the use of technology during the museum experience may eliminate important social interactions and experiences that occur in the history museum environment. Museums tend to be social outings, but there is a major concern that handheld technology may lead to “isolated, individualized experiences.”²⁰⁶ Handheld technology, particularly with individualized earphones, may lead individuals to focus solely on the technology and the information it presents instead of on those whom they are with. Because of anxiety expressed by museum professionals over these issues, handheld technology is increasingly trying to integrate communication and games that involve social interaction or museumgoers being able to see others’ comments or tags. However, more research is necessary in order to create collaborative learning content that can facilitate social interaction.²⁰⁷

Another disadvantage of the use of technology in museums is that both museums and visitors can become too technology-focused. Museums may start to use technology just for the sake of utilizing technology in order to simply entertain and impress visitors or to get grants. This use, while it might be still be good, may sometimes not benefit the museum visitor or may detract from the objects.²⁰⁸ Similarly, the museum visitor might become too focused on the technology and ignore the actual content of the exhibit. In the case of mobile digital devices, visitors may focus too much on the screen and not the actual museum exhibits or objects in front of them. For these reasons, it is important for museums, in adapting technologies, to remember that the heart of the history museum is still the objects located there and the narrative that is told. Technology is just to be one tool of many used in a museum to give museum visitors a positive and memorable experience. For this reason, when creating technologies, it is important to introduce technology-based content only when it is appropriate, without overwhelming the

visitor or the rest of the museum. Technology should be a means to an end, not an end in itself, where the technology should not eclipse the goal of using the technology.²⁰⁹

The drawback to the changes in history museums that has been of most concern among historians and museum professionals is that it may take away some of the authority of historians and history museums. This is that “the new emphasis on interactivity and engagement as a way of reaching and sustaining the interest of audiences brought with it an uneasy sense that the traditional role of museums was being unsettled.”²¹⁰ Museums have been giving museum visitors more authority for several years. In 2002, the National Museum of American History’s exhibit, *September 11: Bearing Witness to History*, had a section called ‘Tell Us Your Stories’ in which, with review by curators, what visitors shared in the exhibit and online then became part of a September 11 digital archive that remains accessible electronically.²¹¹ Another previously mentioned example at the Minnesota History Center was giving the public authority to choose the most important Minnesotans in history to be displayed in the MN150 exhibit, while the curators’ choices were ignored and ones they had not considered important were included. However, these means of visitor contribution were before much of the Web 2.0 technologies which now allow for very little review of information before it is made public.

If anyone can contribute content online or within the museum space, both in terms of interpretations and other forms of content, such as comments to other visitors on handheld devices, the authority of the historian and museum professionals may be undermined as more authority is given to the museumgoer.²¹² This is because the idea of every person as his or her own historian with the ability to interpret the past has been skewed, in some sense, to mean that every person is his or her own curator.²¹³ Museum visitors need to understand that curating or studying history is “creative and scholarly work, requiring critical thinking, not just sharing.”²¹⁴

This means that, though they may be sharing their personal history to an archive, or sharing their opinion about an exhibit online, they do not have the full scholarly training that makes their contribution an authoritative study; yet it is still important to the museum and even to other visitors in the form of discourse, feedback, and contributed content.

Though giving the museum visitor some authority to make their own interpretations is beneficial, there are possibilities that some may arrive at flawed conclusions or contribute biased content to the museum, and then it would be made available, particularly with Web 2.0 technologies, in an increasingly public way. In this sense, visitors should not blur the lines between knowledge and opinion. By giving these visitors unchecked authority, biased and flawed opinions or versions of history may become more prevalent and public both in museums and in society. For this reason, museum professionals and historians need to design exhibits to allow for visitors to have greater authority over their museum content, leading to more reflection and interpretation, while, at the same time, providing enough structure and some level of their trained authority to prevent flawed, unsound conclusions. History museum professionals need to monitor museumgoer-contributed content, both online and in the museum, to assure that there is quality content that is historically accurate and not give museums over to a self-governing, unchecked, and uncontrolled power. History museums need to “help visitors in our museums and online become engaged in history not as a set of facts that they can simply rearrange and share but as a way of understanding and making meaning.”²¹⁵ With these small precautions, museum professionals and historians can give museumgoers more authority while also maintaining their own.²¹⁶

Conclusion

Despite the advancements in technology, including the creation of virtual tours, most museum professionals believe that these technologies cannot replace the artifacts in the museum; instead they will enhance the museum experience as a tool allowing history museums to tell their stories and engage visitors. Museum professionals maintain that there is power in visitors seeing the real thing, a sense of “awe,” according to one museum professional, John Fawcett.²¹⁷

Technology cannot replace the impact of seeing historical artifacts, such as the hat that Lincoln wore when he was assassinated. This conclusion is shared by professionals at small historical societies as well as much larger museums and history centers. Dr. David Davies believes that, though museums may have “cool technology,” they really cannot have any effect or purpose if they still do not have “cool stuff.”²¹⁸ The authenticity that history museums have by collecting artifacts from the past and the academic interpreting of Public History cannot and should not be eclipsed by technology. Museum professional Elaine Mead, who works at a small historical museum in Iowa, said it best, “if I am to view an 1850’s log cabin, I do not want to see a scene that includes a lot of bells and whistles.”²¹⁹ Technology can be used to get people interested in an artifact, better engage them with the history of the artifact, and offer information, but it cannot replace the power of the artifact itself.

Still, museums have changed significantly as they have shifted from focusing solely on the objects, in a collections-based approach, to focusing on the visitors and their experience as well as their interactions. History museums’ adaptation to a more visitor-focused approach has been different from other museums due to the important role of history in the individual identity of its visitors through its importance to their past. History museums have implemented this change by creating opportunities for museumgoers to connect to and interpret the past by

providing them with tools to experience history first hand and also to place them in a role of a storyteller. Technology has been an important tool to accomplish this before, during, and after the museum experience by providing museumgoers with information, by allowing them to have customized as well as personalized experiences, and by creating opportunities for them to interact with content and with each other. These types of technologies, including multimedia handheld guides, stationary kiosks, websites, and Web 2.0, have benefited museums as they have enabled museumgoers to have a fulfilling experience in the museum that is customized to their needs and interests while allowing them to connect to and interpret the past more effectively.

Technology as a tool has been beneficial in creating a customized experience that is more accessible and open to its visitors. Yet, it can also eliminate important interactions that occur within museums between artifacts and other visitors. Additionally, museums and museumgoers can use technology as an end in itself rather than simply as an interpretive tool. For museum professionals, particularly historians, the most problematic part of the use of technologies is that their authority and expertise may be lost as museumgoers are able to create potentially flawed versions of history and then share it in more public ways. Despite these problems, there seems to be little doubt that technology of the future will continue to have an increasing and changing role in presenting the past.

Notes

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- ¹ William H. Honan, "Say Goodbye to the Elephants," *The New York Times*, January 14, 1990, 35-36.
- ² Paul Arthur, "Exhibiting History: The Digital Future," *Journal of the National Museum of Australia* 3, no. 1, (March 2008): 34-35.
- ³ Gail Anderson, Director, Gail Anderson and Associates, interviewed by Caitlin Mans. Interview by phone, October 27, 2010.
- ⁴ Arthur, 34-36.
- ⁵ Jennifer Evans, *What is Public History*, < http://www.publichistory.org/what_is/definition.html>, accessed on February 13, 2011.
- ⁶ Anderson, interviewed by Caitlin Mans.
- ⁷ John Russick, Senior Curator, Chicago History Museum, interviewed by Caitlin Mans. Interview by phone, November 18, 2010.
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Appendix

In fall 2009, I had the opportunity to experience some brief lessons about museums, their history, their approaches, and problems of representation. The information I gained made me more aware of museums and how they displayed objects. From that point on, whenever I went to a museum, I could not help but study the various methods used to display objects and engage audiences. In doing so, I focused on these aspects in many museums, especially throughout my time studying in Europe, while also reflecting on my past internships and museum experiences.

This project began with the intent to study the many ways museums had adapted themselves to engage the modern audience, moving from the former, collections-based approach to the new, interactive, visitor-focused approach. Initially I tried to be inclusive of all types of museums, art and science museums for example, but as I began research and realized how many different types of institutions could be considered museums, I decided to focus on history museums. The reason I chose history museums was that a large portion of the research I found in museum studies focused on art, science, and anthropology museums, while history museums were more considered the study of Public History. Because of the apparent disconnect between the two disciplines in regard to history museums, I sought to study history museums, focusing on modern museum studies methods and ideas, while also still considering the specifics of history that make it different from other fields, as considered through Public History.

At this point, I began my research while creating my approved project prospectus which focused on how I would study the shift of museums from a collections to an interactive approach and what its implications have been for history museums. As I began my research, I again found that this field was quite broad and some of my aspirations too large for a nine or so month long project, an undergraduate senior thesis. I first wanted to study how museums could adapt to

individual museum visitors by knowing different identity-based needs and responding to those needs, as detailed in the book *Identity and the Museum Visitor Experience*, by John Falk. In this, Falk defines five types of museum visitors and how museums can adapt all aspects of the museum experience, that being prior to, during, and after the visit itself, to these different identities and their needs. However, this again proved to be too broad for the project and would require extensive research of museum visitors, all based on the theory of one professional, while I would also have to research more into the many aspects of informal learning environments. Additionally, history museums had used many tools to cater to the modern audience. As my research continued through a literature review and later interviews, I began to narrow my focus to how technology has been used as a tool before, during, and after the museum process to help allow for a more visitor and interactive museum experience, rather than the older collections-based approach. This topic would be narrow enough for me to fully explore many aspects, while also still being thorough, interesting, educational, and relevant.

One of the most difficult, yet informative, aspects of my project would be the interviews I conducted with museum professionals. I originally intended to interview both museum professionals and potential museum visitors. In order to conduct these interviews for use in research, I had to apply to the Institutional Review Board, submitting proposed consent forms and the questions I hoped to ask. I tried to complete this process early in order to give myself adequate time for approval. However, once it was approved in October, I already had decided I would not have enough time to interview the general, potential, museum-going public. Instead, I tried to focus on just interviewing the museum professionals about their general observations and experiences with shifting museum approaches and the use of technology as a tool to adapt to this change.

Because I had eliminated interviewing potential museum visitors, I tried to focus on history museum professionals; however, I also included the professor whose lessons originally inspired my project. To get in contact with museum professionals, I began emailing various museum professionals that I had experience with and also emailed several museums throughout the country, including the Chicago History Museum, Tenement Museum in New York City, a Public Historian at the Smithsonian, and a well-known museum professional, Dr. Gail Anderson. Often these interviews would then be conducted in person, by phone, or when no other options existed, over email. The interviews over phone or in person would often follow my basic question format, but sometimes I would ask further questions based on what was discussed. I tried to get a variety of history museum professionals involved, and believe I was quite successful in terms of variance of size of museum, age and experience of the museum professionals, and location of the museum. However, I was only able to interview twelve museum professionals in total, and a good percentage of them were based in Minnesota. I had contacted more museum professionals, but it was difficult to get in contact with them through the various museums' departments. Still, I am overall satisfied with the interviews and believe that they contributed greatly to the project as well as to my overall understanding of technology as a tool in museums. Without the interviews, I would know very little about the important use by history museums of new internet technology in the form of social media.

In addition to interviews, I used a significant amount of literature on museums and public history for research. This gave me a wide variety of scholarly information on museums, the history of museums themselves, and various tools museums use, including the future and expanding use of technology. To learn about the use of online technology for museums, I found myself visiting various websites used by museums, in addition to the many official websites of

the museums themselves. These methods may appear to be somewhat unorthodox, it is important to remember that much online technology, including Podcast and social media, such as Facebook, has had very little research focused on it or is just starting to be studied for its importance. Because of this, my study of these websites and information gained about them from my interviews was important due to an apparent lack of prior study.

I also used myself as a resource, merely for the fact that, though I am not a museum professional yet, I have had the opportunity to visit many museums as well as intern at three. This has given me experience both as a visitor and as a beginning museum professional. Because of my experiences, I used for examples exhibits that I had visited or worked at that used technology as a tool or were simply examples of a collections or interactive-based approach. I hope, as I further my study in Public History and museum studies, that these experiences, and the knowledge gained through my honors project, will benefit me.

With the research that I have done, I believe that there are still many possibilities for further study, particularly as social media and other online technologies become used for more museums and used in new ways. Additionally, more research is needed as mobile technologies continue to improve and become greater integrated with new capabilities. As the museum world has been changing, the technology that has been used as a tool in it has experienced exponential growth, particularly in the past ten years. Overall, though research has been done to some degree, it is clear from my experience in researching and, through my interviews with museum professionals, that more research is needed about the use of new technologies for museum visitors to use throughout their museum experience. Though my research attempts to do so, it is clear that more research is needed, encompassing a greater variety of museums and more significantly incorporating the experiences of museum visitors.